

TABLE 65

R&D costs paid for by the company and others projected for 2020, by industry and company size: 2019

(Millions of U.S. dollars)

Industry and company size	NAICS code	Projected worldwide R&D cost		Projected domestic R&D cost								Projected foreign R&D cost paid for by the company
				Paid for by the company				Paid for by others				
		Paid for by the company	Paid for by others	Total	Purchased and collaborative R&D	R&D performed by the company	Total	U.S. government	Non-U.S. government sources			
All industries	21–23, 31–33, 42–81	606,520	85,666	499,435	38,256	461,179	66,881	21,811	45,070	107,085		
Manufacturing industries	31–33	368,158	47,582	294,784	33,882	260,902	39,632	15,117	24,516	73,373		
Food	311	5,672	251	4,800	166	4,634	241	*	241	871		
Beverage and tobacco products	312	1,987	124	1,115	149	965	124	0	124	873		
Textile, apparel, and leather products	313–16	1,094	31	892	32	861	31	5	26	202		
Wood products	321	200	7	194	7	187	7	0	7	6		
Paper	322	1,506	1	1,396	7	1,389	*	*	*	110		
Printing and related support activities	323	372	0	362	3	358	0	0	0	10		
Petroleum and coal products	324	1,365	111	1,178	196	981	108	*	108	187		
Chemicals	325	146,932	15,854	120,656	25,215	95,441	10,936	450	10,486	26,276		
Basic chemicals	3251	3,080	168	2,303	58	2,245	165	2	164	777		
Resin, synthetic rubber, and artificial synthetic fibers and filaments	3252	1,669	120	1,132	92	1,039	74	*	74	538		
Pesticide, fertilizer, and other agricultural chemicals	3253	1,175	0 - 395	856	71	785	0 - 385	1	0 - 384	318		
Pharmaceuticals and medicines	3254	135,729	14,974	112,225	24,667	87,558	10,157	428	9,729	23,504		
Soap, cleaning compound, and toilet preparation	3256	3,722	181	2,838	291	2,546	138	*	138	884		
Paint, coating, adhesive, and other chemicals	3255, 3259	1,557	18 - 413	1,302	35	1,267	18 - 403	19	0 - 384	255		
Plastics and rubber products	326	3,517	167	2,939	38	2,901	143	6	137	579		
Nonmetallic mineral products	327	1,702	37	1,483	25	1,458	37	3	35	219		
Primary metals	331	841	16	754	17	737	15	*	15	87		
Fabricated metal products	332	2,645	270	2,410	82	2,328	175	7	168	234		
Machinery	333	19,095	1,344	14,366	419	13,947	1,308	190	1,119	4,729		
Agricultural implement	33311	3,008	10	1,971	186	1,786	9	4	6	1,036		
Semiconductor machinery	333242	4,986	768	4,095	5	4,090	749	*	749	891		
Engine, turbine, and power transmission equipment	3336	2,168	228	1,267	13	1,254	219	153	66	901		
Other machinery	other 333	8,933	338	7,032	216	6,816	331	33	298	1,901		
Computer and electronic products	334	108,549	12,864	82,301	1,747	80,554	11,583	5,248	6,335	26,249		
Communications equipment	3342	15,401	1,442	12,096	762	11,334	1,302	152	1,151	3,305		
Semiconductor and other electronic components	3344	48,625	3,477	34,883	437	34,446	3,101	576	2,525	13,742		

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Navigational, measuring, electromedical, and control instruments	3345	15,030		7,690	11,316	290		11,026	6,953	4,433		2,520	3,715				
Electromedical, electrotherapeutic, and irradiation apparatus	334510, 334517	4,432	i	248	3,227	106		3,121	238	10	i	229	1,205	i			
Search, detection, navigation, guidance, aeronautical, and nautical system and instrument	334511	4,102		7,207	3,474	93		3,381	6,521	4,392		2,129	628				
Other measuring and controlling device	other 3345	6,497		235	4,615	91		4,524	193	32		162	1,882				
Other computer and electronic products	other 334	29,493	i	254	24,006	i	258	i	23,748	i	227	87	140	5,487	i		
Electrical equipment, appliances, and components	335	6,977		426	5,190		175		5,016		402	32	370	1,787			
Transportation equipment	336	42,594		15,801	35,167	i	4,693		30,474	i	14,298	9,133	i	5,164	i	7,427	
Motor vehicles, bodies, trailers, and parts	3361–63	30,443		4,218	23,738	i	3,847		19,891		3,759 - 4,219	i	0 - 1,188		2,572 - 3,774	i	6,706
Aerospace products and parts	3364	9,728		10,373	9,325	i	797		8,528	i	9,328	7,938	i	1,390		404	
Aircraft, aircraft engine, and aircraft parts	336411–13	9,053		9,392	8,650	i	663		7,987	i	8,346	7,007	i	1,339		403	
Guided missile, space vehicle, and related parts	336414–15, 336419	675		982	675	i	134		541	i	982	931	i	51	i	*	
Military armored vehicle, tank, and tank component	336992	23		11	23		0		23		11	9		2		0	
Other transportation	other 336	2,399		1,198	2,081		49		2,033		739 - 1,199	0 - 1,188		0 - 1,199		318	i
Furniture and related products	337	457		2	420	i	17	i	403		2	1	i	1	i	38	
Miscellaneous	339	22,652		278	19,162		895		18,267		223	40		183		3,490	
Medical equipment and supplies	3391	19,706		231	16,610		772		15,838		176	18		159		3,097	
Other miscellaneous manufacturing	3399	2,945		47	2,552		123		2,429		46	22		24		393	
Nonmanufacturing industries	21–23, 42–81	238,363		38,084	204,651		4,374		200,277		27,249	6,695		20,554		33,712	i
Mining, quarrying, oil and gas extraction, and support activities	21	3,031		155	2,416		118	i	2,298	i	147	39		108		615	
Utilities	22	382		49	373		149		225		49	43		6		9	
Wholesale trade	42	1,287	i	83	1,174	i	49	i	1,125	i	81	0		81	i	113	
Electronic shopping and electronic auctions	454111–12	23 - 25,450	i	*	23 - 20,431	i	24		0 - 20,408	i	*	*	i	0		0 - 5,023	i
Transportation and warehousing	48–49	10,452	i	208	10,375	i	30	i	10,345	i	208	0		208		77	
Information	51	148,502		1,255	126,797		2,536		124,260		1,194	121		1,074		21,705	
Publishing	511	44,391		661	37,251		1,175		36,076		611	74		536		7,140	
Newspaper, periodical, book, and directory publishers	5111	59		*	58	i	3		55		*	*	i	*	i	1	

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Software publishers	5112	44,332	661	37,193	1,172	36,021	610	74	536	7,139	
Telecommunications	517	4,338	41	4,178	419	3,760	41	12	29	159	
Data processing, hosting, and related services	518	39,687	396	32,969	512	32,458	386	26	360	6,718	
Other information	other 51	60,086	157	52,399	431	51,967	157	8	149	7,688	
Finance and insurance	52	10,797	3	9,581	347	9,233	1	0	1	1,217	
Real estate and rental and leasing	53	1,876	0	1,713	*	1,713	0	0	0	163	
Lessors of nonfinancial intangible assets (except copyrighted works)	533	56	0	40	*	40	0	0	0	16	
Other real estate and rental and leasing	other 53	1,820	0	1,673	*	1,672	0	0	0	148	
Professional, scientific, and technical services	54	34,193	35,892	29,422	965	28,456	25,148	6,465	18,683	4,772	
Architectural, engineering, and related services	5413	2,552	1,984	2,480	195	2,285	1,937	1,315	622	73	
Computer systems design and related services	5415	21,429	2,496	17,238	256	16,982	2,395	601	1,794	4,191	
Scientific research and development services	5417	4,163	30,029	3,975	421	3,554	19,481	3,710	15,771	188	
Research and development in biotechnology	541711	1,290	8,647	1,248	149	1,099	5,628	138	5,489	42	
Research and development in the physical, engineering, and life sciences (except biotechnology)	541712	2,844	20,525	2,699	272	2,427	13,077	2,865	10,212	146	
Research and development in the social sciences and humanities	541720	29	856	29	*	29	776	707	70	*	
Other professional, scientific, and technical services	other 54	6,049	1,384	5,729	94	5,635	1,335	839	496	320	
Health care services	621–23	2,311	389	2,288	70	2,218	374	16	358	23	
Other nonmanufacturing	23, 44–45 (excluding 454111–12), 55–56, 624, 71–72, 81	85 - 25,512	50	85 - 20,493	86	0 - 20,408	47	11	36	0 - 5,023	
All companies (number of domestic employees)	–	606,520	85,666	499,435	38,256	461,179	66,881	21,811	45,070	107,085	
Small companies											
10–19 ^a	–	5,312	1,161	4,911	434	4,476	1,122	458	664	402	
20–49	–	13,559	2,707	12,640	1,561	11,079	2,297	1,030	1,267	919	
Medium companies											
50–99	–	15,033	2,947	13,787	2,272	11,515	2,607	911	1,696	1,246	
100–249	–	23,287	3,722	20,109	2,138	17,972	3,427	1,166	2,261	3,178	
Large companies											
250–499	–	20,623	4,182	17,603	1,793	15,810	3,923	1,600	2,323	3,020	

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500–999	–	31,319	3,383		28,117	2,761	i	25,355	2,993	455	i	2,537		3,202				
1,000–4,999	–	91,228	14,576		72,823	5,595		67,228	11,850	1,938	i	9,913		18,405				
5,000–9,999	–	61,740	9,696	i	51,198	3,439		47,759	6,648	i	901		5,747	i	10,542			
10,000–24,999	–	106,911	21,790	i	86,851	8,530		78,322	i	14,414	i	750		13,663	i	20,060		
25,000 or more	–	237,509	i	21,500		191,397	i	9,734		181,663	i	17,602	12,602	i	5,000		46,112	i

* = amount < \$500,000; i = > 50% of the estimate is a combination of imputation and reweighting to account for nonresponse.

NAICS = 2012 North American Industry Classification System.

^a The Business Enterprise Research and Development Survey does not include companies with fewer than 10 domestic employees.

Note(s):

Detail may not add to total because of rounding. Industry classification is based on the dominant business code for domestic R&D performance, where available. For companies that did not report business codes, the classification used for sampling was assigned. Beginning in survey year 2018, statistics are representative of companies located in the United States that performed or funded \$50,000 or more of R&D. This change has affected the comparability of these estimates with estimates published for years prior to 2018. An estimate range may be displayed in place of a single estimate to avoid disclosing operations of individual companies.

Source(s):

National Center for Science and Engineering Statistics and Census Bureau, Business Enterprise Research and Development Survey, 2019.